



SEQUENCE LISTING

<110> Zuker, Charles S.
The Regents of the University of California

<120> Assays for Sensory Modulators Using a Sensory Cell
Specific G-Protein Alpha Subunit

<130> 02307E-092610US

<140> US 09/492,028

<141> 2000-01-26

<150> US 60/117,367

<151> 1999-01-27

<160> 14

<170> PatentIn Ver. 2.1

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<213> Mus sp.

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<221> CDS

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<223> mouse taste cell specific G-protein alpha 14
subunit (TC-Galpa14)

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Phe Thr Lys Leu Val Tyr Gln Asn Ile Phe Thr Ala Met Gln Ala Met
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 Glu Val Asp Lys Val Thr Ala Leu Ser Arg Asp Gln Val Ala Ala Ile
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<223> rat G-protein coupled receptor B3 (GPCR-B3)

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Asp Ser Phe Asn Gly His Gly Tyr His Leu Phe Gln Ala Met Arg Phe
    65                      70                      75                      80

```

```

Thr Val Glu Glu Ile Asn Asn Ser Ser Ala Leu Leu Pro Asn Ile Thr
                85                      90                      95

```

```

Leu Gly Tyr Glu Leu Tyr Asp Val Cys Ser Glu Ser Ala Asn Val Tyr
    100                      105                      110

```

```

Ala Thr Leu Arg Val Leu Ala Leu Gln Gly Pro Arg His Ile Glu Ile
    115                      120                      125

```

```

Gln Lys Asp Leu Arg Asn His Ser Ser Lys Val Val Ala Phe Ile Gly
    130                      135                      140

```

```

Pro Asp Asn Thr Asp His Ala Val Thr Thr Ala Ala Leu Leu Gly Pro
    145                      150                      155                      160

```

```

Phe Leu Met Pro Leu Val Ser Tyr Glu Ala Ser Ser Val Val Leu Ser
                165                      170                      175

```

```

Ala Lys Arg Lys Phe Pro Ser Phe Leu Arg Thr Val Pro Ser Asp Arg
    180                      185                      190

```

His	Gln	Val	Glu	Val	Met	Val	Gln	Leu	Leu	Gln	Ser	Phe	Gly	Trp	Val	195	200	205	
Trp	Ile	Ser	Leu	Ile	Gly	Ser	Tyr	Gly	Asp	Tyr	Gly	Gln	Leu	Gly	Val	210	215	220	
Gln	Ala	Leu	Glu	Glu	Leu	Ala	Val	Pro	Arg	Gly	Ile	Cys	Val	Ala	Phe	225	230	235	240
Lys	Asp	Ile	Val	Pro	Phe	Ser	Ala	Arg	Val	Gly	Asp	Pro	Arg	Met	Gln	245	250	255	
Ser	Met	Met	Gln	His	Leu	Ala	Gln	Ala	Arg	Thr	Thr	Val	Val	Val	Val	260	265	270	
Phe	Ser	Asn	Arg	His	Leu	Ala	Arg	Val	Phe	Phe	Arg	Ser	Val	Val	Leu	275	280	285	
Ala	Asn	Leu	Thr	Gly	Lys	Val	Trp	Val	Ala	Ser	Glu	Asp	Trp	Ala	Ile	290	295	300	
Ser	Thr	Tyr	Ile	Thr	Ser	Val	Thr	Gly	Ile	Gln	Gly	Ile	Gly	Thr	Val	305	310	315	320
Leu	Gly	Val	Ala	Val	Gln	Gln	Arg	Gln	Val	Pro	Gly	Leu	Lys	Glu	Phe	325	330	335	
Glu	Glu	Ser	Tyr	Val	Arg	Ala	Val	Thr	Ala	Ala	Pro	Ser	Ala	Cys	Pro	340	345	350	
Glu	Gly	Ser	Trp	Cys	Ser	Thr	Asn	Gln	Leu	Cys	Arg	Glu	Cys	His	Thr	355	360	365	
Phe	Thr	Thr	Arg	Asn	Met	Pro	Thr	Leu	Gly	Ala	Phe	Ser	Met	Ser	Ala	370	375	380	
Ala	Tyr	Arg	Val	Tyr	Glu	Ala	Val	Tyr	Ala	Val	Ala	His	Gly	Leu	His	385	390	395	400
Gln	Leu	Leu	Gly	Cys	Thr	Ser	Glu	Ile	Cys	Ser	Arg	Gly	Pro	Val	Tyr	405	410	415	
Pro	Trp	Gln	Leu	Leu	Gln	Gln	Ile	Tyr	Lys	Val	Asn	Phe	Leu	Leu	His	420	425	430	
Glu	Asn	Thr	Val	Ala	Phe	Asp	Asp	Asn	Gly	Asp	Thr	Leu	Gly	Tyr	Tyr	435	440	445	
Asp	Ile	Ile	Ala	Trp	Asp	Trp	Asn	Gly	Pro	Glu	Trp	Thr	Phe	Glu	Ile	450	455	460	
Ile	Gly	Ser	Ala	Ser	Leu	Ser	Pro	Val	His	Leu	Asp	Ile	Asn	Lys	Thr	465	470	475	480
Lys	Ile	Gln	Trp	His	Gly	Lys	Asn	Asn	Gln	Val	Pro	Val	Ser	Val	Cys	485	490	495	
Thr	Thr	Asp	Cys	Leu	Ala	Gly	His	His	Arg	Val	Val	Val	Gly	Ser	His	500	505	510	

His	Cys	Cys	Phe	Glu	Cys	Val	Pro	Cys	Glu	Ala	Gly	Thr	Phe	Leu	Asn			
		515					520					525						
Met	Ser	Glu	Leu	His	Ile	Cys	Gln	Pro	Cys	Gly	Thr	Glu	Glu	Trp	Ala			
	530					535					540							
Pro	Lys	Glu	Ser	Thr	Thr	Cys	Phe	Pro	Arg	Thr	Val	Glu	Phe	Leu	Ala			
545					550					555					560			
Trp	His	Glu	Pro	Ile	Ser	Leu	Val	Leu	Ile	Ala	Ala	Asn	Thr	Leu	Leu			
				565					570					575				
Leu	Leu	Leu	Leu	Val	Gly	Thr	Ala	Gly	Leu	Phe	Ala	Trp	His	Phe	His			
			580					585					590					
Thr	Pro	Val	Val	Arg	Ser	Ala	Gly	Gly	Arg	Leu	Cys	Phe	Leu	Met	Leu			
		595					600					605						
Gly	Ser	Leu	Val	Ala	Gly	Ser	Cys	Ser	Phe	Tyr	Ser	Phe	Phe	Gly	Glu			
	610					615					620							
Pro	Thr	Val	Pro	Ala	Cys	Leu	Leu	Arg	Gln	Pro	Leu	Phe	Ser	Leu	Gly			
625					630				635						640			
Phe	Ala	Ile	Phe	Leu	Ser	Cys	Leu	Thr	Ile	Arg	Ser	Phe	Gln	Leu	Val			
				645					650					655				
Ile	Ile	Phe	Lys	Phe	Ser	Thr	Lys	Val	Pro	Thr	Phe	Tyr	Arg	Thr	Trp			
			660					665					670					
Ala	Gln	Asn	His	Gly	Ala	Gly	Leu	Phe	Val	Ile	Val	Ser	Ser	Thr	Val			
		675					680					685						
His	Leu	Leu	Ile	Cys	Leu	Thr	Trp	Leu	Val	Met	Trp	Thr	Pro	Arg	Pro			
	690					695					700							
Thr	Arg	Glu	Tyr	Gln	Arg	Phe	Pro	His	Leu	Val	Ile	Leu	Glu	Cys	Thr			
705					710					715					720			
Glu	Val	Asn	Ser	Val	Gly	Phe	Leu	Leu	Ala	Phe	Thr	His	Asn	Ile	Leu			
				725					730					735				
Leu	Ser	Ile	Ser	Thr	Phe	Val	Cys	Ser	Tyr	Leu	Gly	Lys	Glu	Leu	Pro			
			740					745					750					
Glu	Asn	Tyr	Asn	Glu	Ala	Lys	Cys	Val	Thr	Phe	Ser	Leu	Leu	Leu	Asn			
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Phe	Val	Ser	Trp	Ile	Ala	Phe	Phe	Thr	Met	Ala	Ser	Ile	Tyr	Gln	Gly			
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Ser	Tyr	Leu	Pro	Ala	Val	Asn	Val	Leu	Ala	Gly	Leu	Thr	Thr	Leu	Ser			
785					790					795					800			
Gly	Gly	Phe	Ser	Gly	Tyr	Phe	Leu	Pro	Lys	Cys	Tyr	Val	Ile	Leu	Cys			
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Tyr Thr Arg Arg Cys Gly Thr Thr
 835 840

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 <213> Mus sp.

<220>
 <223> mouse G-protein coupled receptor B3 (GPCR-B3)

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 35 40 45
 Ala Asp Cys Leu Gln Val Arg His Arg Pro Leu Val Thr Ser Cys Asp
 50 55 60
 Arg Ser Asp Ser Phe Asn Gly His Gly Tyr His Leu Phe Gln Ala Met
 65 70 75 80
 Arg Phe Thr Val Glu Glu Ile Asn Asn Ser Thr Ala Leu Leu Pro Asn
 85 90 95
 Ile Thr Leu Gly Tyr Glu Leu Tyr Asp Val Cys Ser Glu Ser Ser Asn
 100 105 110
 Val Tyr Ala Thr Leu Arg Val Pro Ala Gln Gln Gly Thr Gly His Leu
 115 120 125
 Glu Met Gln Arg Asp Leu Arg Asn His Ser Ser Lys Val Val Ala Leu
 130 135 140
 Ile Gly Pro Asp Asn Thr Asp His Ala Val Thr Thr Ala Ala Leu Leu
 145 150 155 160
 Ser Pro Phe Leu Met Pro Leu Val Ser Tyr Glu Ala Ser Ser Val Ile
 165 170 175
 Leu Ser Gly Lys Arg Lys Phe Pro Ser Phe Leu Arg Thr Ile Pro Ser
 180 185 190
 Asp Lys Tyr Gln Val Glu Val Ile Val Arg Leu Leu Gln Ser Phe Gly
 195 200 205
 Trp Val Trp Ile Ser Leu Val Gly Ser Tyr Gly Asp Tyr Gly Gln Leu
 210 215 220
 Gly Val Gln Ala Leu Glu Glu Leu Ala Thr Pro Arg Gly Ile Cys Val
 225 230 235 240

Ala	Phe	Lys	Asp	Val	Val	Pro	Leu	Ser	Ala	Gln	Ala	Gly	Asp	Pro	Arg	
				245					250					255		
Met	Gln	Arg	Met	Met	Leu	Arg	Leu	Ala	Arg	Ala	Arg	Thr	Thr	Val	Val	
			260					265					270			
Val	Val	Phe	Ser	Asn	Arg	His	Leu	Ala	Gly	Val	Phe	Phe	Arg	Ser	Val	
		275					280					285				
Val	Leu	Ala	Asn	Leu	Thr	Gly	Lys	Val	Trp	Ile	Ala	Ser	Glu	Asp	Trp	
	290					295					300					
Ala	Ile	Ser	Thr	Tyr	Ile	Thr	Asn	Val	Pro	Gly	Ile	Gln	Gly	Ile	Gly	
305					310					315					320	
Thr	Val	Leu	Gly	Val	Ala	Ile	Gln	Gln	Arg	Gln	Val	Pro	Gly	Leu	Lys	
				325					330					335		
Glu	Phe	Glu	Glu	Ser	Tyr	Val	Gln	Ala	Val	Met	Gly	Ala	Pro	Arg	Thr	
			340					345					350			
Cys	Pro	Glu	Gly	Ser	Trp	Cys	Gly	Thr	Asn	Gln	Leu	Cys	Arg	Glu	Cys	
		355					360					365				
His	Ala	Phe	Thr	Thr	Trp	Asn	Met	Pro	Glu	Leu	Gly	Ala	Phe	Ser	Met	
	370					375					380					
Ser	Ala	Ala	Tyr	Asn	Val	Tyr	Glu	Ala	Val	Tyr	Ala	Val	Ala	His	Gly	
385					390					395					400	
Leu	His	Gln	Leu	Leu	Gly	Cys	Thr	Ser	Gly	Thr	Cys	Ala	Arg	Gly	Pro	
				405					410					415		
Val	Tyr	Pro	Trp	Gln	Leu	Leu	Gln	Gln	Ile	Tyr	Lys	Val	Asn	Phe	Leu	
			420					425					430			
Leu	His	Lys	Lys	Thr	Val	Ala	Phe	Asp	Asp	Lys	Gly	Asp	Pro	Leu	Gly	
		435					440					445				
Tyr	Tyr	Asp	Ile	Ile	Ala	Trp	Asp	Trp	Asn	Gly	Pro	Glu	Trp	Thr	Phe	
	450					455					460					
Glu	Val	Ile	Gly	Ser	Ala	Ser	Leu	Ser	Pro	Val	His	Leu	Asp	Ile	Asn	
465					470					475					480	
Lys	Thr	Lys	Ile	Gln	Trp	His	Gly	Lys	Asn	Asn	Gln	Val	Pro	Val	Ser	
				485					490					495		
Val	Cys	Thr	Arg	Asp	Cys	Leu	Glu	Gly	His	His	Arg	Leu	Val	Met	Gly	
			500					505					510			
Ser	His	His	Cys	Cys	Phe	Glu	Cys	Met	Pro	Cys	Glu	Ala	Gly	Thr	Phe	
		515					520					525				
Leu	Asn	Thr	Ser	Glu	Leu	His	Thr	Cys	Gln	Pro	Cys	Gly	Thr	Glu	Glu	
	530					535					540					
Trp	Ala	Pro	Glu	Gly	Ser	Ser	Ala	Cys	Phe	Ser	Arg	Thr	Val	Glu	Phe	
545					550					555					560	

Leu Gly Trp His Glu Pro Ile Ser Leu Val Leu Leu Ala Ala Asn Thr
 565 570 575
 Leu Leu Leu Leu Leu Leu Ile Gly Thr Ala Gly Leu Phe Ala Trp Arg
 580 585 590
 Leu His Thr Pro Val Val Arg Ser Ala Gly Gly Arg Leu Cys Phe Leu
 595 600 605
 Met Leu Gly Ser Leu Val Ala Gly Ser Cys Ser Leu Tyr Ser Phe Phe
 610 615 620
 Gly Lys Pro Thr Val Pro Ala Cys Leu Leu Arg Gln Pro Leu Phe Ser
 625 630 635 640
 Leu Gly Phe Ala Ile Phe Leu Ser Cys Leu Thr Ile Arg Ser Phe Gln
 645 650 655
 Leu Val Ile Ile Phe Lys Phe Ser Thr Lys Val Pro Thr Phe Tyr His
 660 665 670
 Thr Trp Ala Gln Asn His Gly Ala Gly Ile Phe Val Ile Val Ser Ser
 675 680 685
 Thr Val His Leu Phe Leu Cys Leu Thr Trp Leu Ala Met Trp Thr Pro
 690 695 700
 Arg Pro Thr Arg Glu Tyr Gln Arg Phe Pro His Leu Val Ile Leu Glu
 705 710 715 720
 Cys Thr Glu Val Asn Ser Val Gly Phe Leu Val Ala Phe Ala His Asn
 725 730 735
 Ile Leu Leu Ser Ile Ser Thr Phe Val Cys Ser Tyr Leu Gly Lys Glu
 740 745 750
 Leu Pro Glu Asn Tyr Asn Glu Ala Lys Cys Val Thr Phe Ser Leu Leu
 755 760 765
 Leu His Phe Val Ser Trp Ile Ala Phe Phe Thr Met Ser Ser Ile Tyr
 770 775 780
 Gln Gly Ser Tyr Leu Pro Ala Val Asn Val Leu Ala Gly Leu Ala Thr
 785 790 795 800
 Leu Ser Gly Gly Phe Ser Gly Tyr Phe Leu Pro Lys Cys Tyr Val Ile
 805 810 815
 Leu Cys Arg Pro Glu Leu Asn Asn Thr Glu His Phe Gln Ala Ser Ile
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 Gln Asp Tyr Thr Arg Arg Cys Gly Thr Thr
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<211> 777

<212> PRT

<213> Homo sapiens

<220>

<223> human G-protein coupled receptor B3 (GPCR-B3)

<400> 8

Arg	Ser	Cys	Ser	Phe	Asn	Glu	His	Gly	Tyr	His	Leu	Phe	Gln	Ala	Met	1	5	10	15
Arg	Leu	Gly	Val	Glu	Glu	Ile	Asn	Asn	Ser	Thr	Ala	Leu	Leu	Pro	Asn	20	25	30	
Ile	Thr	Leu	Gly	Tyr	Gln	Leu	Tyr	Asp	Val	Cys	Ser	Asp	Ser	Ala	Asn	35	40	45	
Val	Tyr	Ala	Thr	Leu	Arg	Val	Leu	Ser	Leu	Pro	Gly	Gln	His	His	Ile	50	55	60	
Glu	Leu	Gln	Gly	Asp	Leu	Leu	His	Tyr	Ser	Pro	Thr	Val	Leu	Ala	Val	65	70	75	80
Ile	Gly	Pro	Asp	Ser	Thr	Asn	Arg	Ala	Ala	Thr	Thr	Ala	Ala	Leu	Leu	85	90	95	
Ser	Pro	Phe	Leu	Val	His	Ile	Ser	Tyr	Ala	Ala	Ser	Ser	Glu	Thr	Leu	100	105	110	
Ser	Val	Lys	Arg	Gln	Tyr	Pro	Ser	Phe	Leu	Arg	Thr	Ile	Pro	Asn	Asp	115	120	125	
Lys	Tyr	Gln	Val	Glu	Thr	Met	Val	Leu	Leu	Leu	Gln	Lys	Phe	Gly	Trp	130	135	140	
Thr	Trp	Ile	Ser	Leu	Val	Gly	Ser	Ser	Asp	Asp	Tyr	Gly	Gln	Leu	Gly	145	150	155	160
Val	Gln	Ala	Leu	Glu	Asn	Gln	Ala	Leu	Val	Arg	Gly	Ile	Cys	Ile	Ala	165	170	175	
Phe	Lys	Asp	Ile	Met	Pro	Phe	Ser	Ala	Gln	Val	Gly	Asp	Glu	Arg	Met	180	185	190	
Gln	Cys	Leu	Met	Arg	His	Leu	Ala	Gln	Ala	Gly	Ala	Thr	Val	Val	Val	195	200	205	
Val	Phe	Ser	Ser	Arg	Gln	Leu	Ala	Arg	Val	Phe	Phe	Glu	Ser	Val	Val	210	215	220	
Leu	Thr	Asn	Leu	Thr	Gly	Lys	Val	Trp	Val	Ala	Ser	Glu	Ala	Trp	Ala	225	230	235	240
Leu	Ser	Arg	His	Ile	Thr	Gly	Val	Pro	Gly	Ile	Gln	Arg	Ile	Gly	Met	245	250	255	
Val	Leu	Gly	Val	Ala	Ile	Gln	Lys	Arg	Ala	Val	Pro	Gly	Leu	Lys	Ala	260	265	270	
Phe	Glu	Glu	Ala	Tyr	Ala	Arg	Ala	Asp	Lys	Glu	Ala	Pro	Arg	Pro	Cys	275	280	285	
His	Lys	Gly	Ser	Trp	Cys	Ser	Ser	Asn	Gln	Leu	Cys	Arg	Glu	Cys	Gln	290	295	300	

Ala	Phe	Met	Ala	His	Thr	Met	Pro	Lys	Leu	Lys	Ala	Phe	Ser	Met	Ser	305	310	315	320
Ser	Ala	Tyr	Asn	Ala	Tyr	Arg	Ala	Val	Tyr	Ala	Val	Ala	His	Gly	Leu		325	330	335
His	Gln	Leu	Leu	Gly	Cys	Ala	Ser	Glu	Leu	Cys	Ser	Arg	Gly	Arg	Val		340	345	350
Tyr	Pro	Trp	Gln	Leu	Leu	Glu	Gln	Ile	His	Lys	Val	His	Phe	Leu	Leu		355	360	365
His	Lys	Asp	Thr	Val	Ala	Phe	Asn	Asp	Asn	Arg	Asp	Pro	Leu	Ser	Ser	370	375	380	
Tyr	Asn	Ile	Ile	Ala	Trp	Asp	Trp	Asn	Gly	Pro	Lys	Trp	Thr	Phe	Thr	385	390	395	400
Val	Leu	Gly	Ser	Ser	Thr	Trp	Ser	Pro	Val	Gln	Leu	Asn	Ile	Asn	Glu		405	410	415
Thr	Lys	Ile	Gln	Trp	His	Gly	Lys	Asn	His	Gln	Val	Pro	Lys	Ser	Val		420	425	430
Cys	Ser	Ser	Asp	Cys	Leu	Glu	Gly	His	Gln	Arg	Val	Val	Thr	Gly	Phe	435	440	445	
His	His	Cys	Cys	Phe	Glu	Cys	Val	Pro	Cys	Gly	Ala	Gly	Thr	Phe	Leu	450	455	460	
Asn	Lys	Ser	Glu	Leu	Tyr	Arg	Cys	Gln	Pro	Cys	Gly	Thr	Glu	Glu	Trp	465	470	475	480
Ala	Pro	Glu	Gly	Ser	Gln	Thr	Cys	Phe	Pro	Arg	Thr	Val	Val	Phe	Leu		485	490	495
Ala	Leu	Arg	Glu	His	Thr	Ser	Trp	Val	Leu	Leu	Ala	Ala	Asn	Thr	Leu		500	505	510
Leu	Leu	Leu	Leu	Leu	Leu	Gly	Thr	Ala	Gly	Leu	Phe	Ala	Trp	His	Leu	515	520	525	
Asp	Thr	Pro	Val	Val	Arg	Ser	Ala	Gly	Gly	Arg	Leu	Cys	Phe	Leu	Met	530	535	540	
Leu	Gly	Ser	Leu	Ala	Ala	Gly	Ser	Gly	Ser	Leu	Tyr	Gly	Phe	Phe	Gly	545	550	555	560
Glu	Pro	Thr	Arg	Pro	Ala	Cys	Leu	Leu	Arg	Gln	Ala	Leu	Phe	Ala	Leu		565	570	575
Gly	Phe	Thr	Ile	Phe	Leu	Ser	Cys	Leu	Thr	Val	Arg	Ser	Phe	Gln	Leu		580	585	590
Ile	Ile	Ile	Phe	Lys	Phe	Ser	Thr	Lys	Val	Pro	Thr	Phe	Tyr	His	Ala	595	600	605	
Trp	Val	Gln	Asn	His	Gly	Ala	Gly	Leu	Phe	Val	Met	Ile	Ser	Ser	Ala	610	615	620	

Ala Gln Leu Leu Ile Cys Leu Thr Trp Leu Val Val Trp Thr Pro Leu
625 630 635 640

Pro Ala Arg Glu Tyr Gln Arg Phe Pro His Leu Val Met Leu Glu Cys
645 650 655

Thr Glu Thr Asn Ser Leu Gly Phe Ile Leu Ala Phe Leu Tyr Asn Gly
660 665 670

Leu Leu Ser Ile Ser Ala Phe Ala Cys Ser Tyr Leu Gly Lys Asp Leu
675 680 685

Pro Glu Asn Tyr Asn Glu Ala Lys Cys Val Thr Phe Ser Leu Leu Phe
690 695 700

Asn Phe Val Ser Trp Ile Ala Phe Phe Thr Thr Ala Ser Val Tyr Asp
705 710 715 720

Gly Lys Tyr Leu Pro Ala Ala Asn Met Met Ala Gly Leu Ser Ser Leu
725 730 735

Ser Ser Gly Phe Gly Gly Tyr Phe Leu Pro Lys Cys Tyr Val Ile Leu
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Cys Arg Pro Asp Leu Asn Ser Thr Glu His Phe Gln Ala Ser Ile Gln
755 760 765

Asp Tyr Thr Arg Arg Cys Gly Ser Thr
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<213> Rattus sp.

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<223> rat G-protein coupled receptor (GPCR) B4
nucleotide sequence

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 <211> 2532
 <212> DNA
 <213> Mus sp.

<220>
 <223> mouse G-protein coupled receptor (GPCR) B4
 nucleotide sequence

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<210> 11
<211> 2010
<212> DNA
<213> Homo sapiens

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<220>
<223> human G-protein coupled receptor (GPCR) B4
nucleotide sequence

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<210> 12
 <211> 843
 <212> PRT
 <213> Rattus sp.

<220>
 <223> rat G-protein coupled receptor (GPCR) B4 amino
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 Ala Gly Asp Tyr Leu Leu Gly Gly Leu Phe Thr Leu His Ala Asn Val
 35 40 45
 Lys Ser Ile Ser His Leu Ser Tyr Leu Gln Val Pro Lys Cys Asn Glu
 50 55 60
 Phe Thr Met Lys Val Leu Gly Tyr Asn Leu Met Gln Ala Met Arg Phe
 65 70 75 80
 Ala Val Glu Glu Ile Asn Asn Cys Ser Ser Leu Leu Pro Gly Val Leu
 85 90 95
 Leu Gly Tyr Glu Met Val Asp Val Cys Tyr Leu Ser Asn Asn Ile His
 100 105 110
 Pro Gly Leu Tyr Phe Leu Ala Gln Asp Asp Asp Leu Leu Pro Ile Leu
 115 120 125
 Lys Asp Tyr Ser Gln Tyr Met Pro His Val Val Ala Val Ile Gly Pro
 130 135 140
 Asp Asn Ser Glu Ser Ala Ile Thr Val Ser Asn Ile Leu Ser His Phe
 145 150 155 160
 Leu Ile Pro Gln Ile Thr Tyr Ser Ala Ile Ser Asp Lys Leu Arg Asp
 165 170 175
 Lys Arg His Phe Pro Ser Met Leu Arg Thr Val Pro Ser Ala Thr His
 180 185 190
 His Ile Glu Ala Met Val Gln Leu Met Val His Phe Gln Trp Asn Trp
 195 200 205
 Ile Val Val Leu Val Ser Asp Asp Asp Tyr Gly Arg Glu Asn Ser His
 210 215 220

Leu 225	Leu	Ser	Gln	Arg	Leu 230	Thr	Lys	Thr	Ser	Asp 235	Ile	Cys	Ile	Ala	Phe 240
Gln	Glu	Val	Leu	Pro 245	Ile	Pro	Glu	Ser	Ser 250	Gln	Val	Met	Arg	Ser 255	Glu
Glu	Gln	Arg	Gln 260	Leu	Asp	Asn	Ile	Leu 265	Asp	Lys	Leu	Arg	Arg 270	Thr	Ser
Ala	Arg	Val 275	Val	Val	Val	Phe	Ser 280	Pro	Glu	Leu	Ser	Leu 285	Tyr	Ser	Phe
Phe 290	His	Glu	Val	Leu	Arg	Trp 295	Asn	Phe	Thr	Gly	Phe 300	Val	Trp	Ile	Ala
Ser 305	Glu	Ser	Trp	Ala	Ile 310	Asp	Pro	Val	Leu	His 315	Asn	Leu	Thr	Glu	Leu 320
Arg	His	Thr	Gly 325	Thr	Phe	Leu	Gly	Val	Thr 330	Ile	Gln	Arg	Val	Ser 335	Ile
Pro	Gly	Phe 340	Ser	Gln	Phe	Arg	Val	Arg 345	Arg	Asp	Lys	Pro	Gly 350	Tyr	Pro
Val	Pro 355	Asn	Thr	Thr	Asn	Leu	Arg 360	Thr	Thr	Cys	Asn	Gln 365	Asp	Cys	Asp
Ala 370	Cys	Leu	Asn	Thr	Thr	Lys 375	Ser	Phe	Asn	Asn	Ile 380	Leu	Ile	Leu	Ser
Gly 385	Glu	Arg	Val	Val	Tyr 390	Ser	Val	Tyr	Ser	Ala 395	Val	Tyr	Ala	Val	Ala 400
His	Ala	Leu	His 405	Arg	Leu	Leu	Gly	Cys	Asn 410	Arg	Val	Arg	Cys	Thr 415	Lys
Gln	Lys	Val 420	Tyr	Pro	Trp	Gln	Leu	Leu 425	Arg	Glu	Ile	Trp	His 430	Val	Asn
Phe 435	Thr	Leu	Leu	Gly	Asn	Arg	Leu 440	Phe	Phe	Asp	Gln	Gln 445	Gly	Asp	Met
Pro 450	Met	Leu	Leu	Asp	Ile	Ile 455	Gln	Trp	Gln	Trp	Asp 460	Leu	Ser	Gln	Asn
Pro 465	Phe	Gln	Ser	Ile	Ala 470	Ser	Tyr	Ser	Pro	Thr 475	Ser	Lys	Arg	Leu	Thr 480
Tyr	Ile	Asn	Asn 485	Val	Ser	Trp	Tyr	Thr	Pro 490	Asn	Asn	Thr	Val	Pro 495	Val
Ser	Met	Cys 500	Ser	Lys	Ser	Cys	Gln	Pro 505	Gly	Gln	Met	Lys	Lys 510	Ser	Val
Gly 515	Leu	His	Pro	Cys	Cys	Phe	Glu 520	Cys	Leu	Asp	Cys	Met 525	Pro	Gly	Thr
Tyr 530	Leu	Asn	Arg	Ser	Ala	Asp 535	Glu	Phe	Asn	Cys	Leu 540	Ser	Cys	Pro	Gly

Ser 545	Met	Trp	Ser	Tyr	Lys 550	Asn	Asp	Ile	Thr	Cys 555	Phe	Gln	Arg	Arg	Pro 560
Thr	Phe	Leu	Glu	Trp 565	His	Glu	Val	Pro	Thr 570	Ile	Val	Val	Ala	Ile 575	Leu
Ala	Ala	Leu	Gly 580	Phe	Phe	Ser	Thr	Leu 585	Ala	Ile	Leu	Phe	Ile 590	Phe	Trp
Arg	His	Phe 595	Gln	Thr	Pro	Met	Val 600	Arg	Ser	Ala	Gly	Gly 605	Pro	Met	Cys
Phe 610	Leu	Met	Leu	Val	Pro	Leu 615	Leu	Leu	Ala	Phe	Gly 620	Met	Val	Pro	Val
Tyr 625	Val	Gly	Pro	Pro	Thr 630	Val	Phe	Ser	Cys	Phe 635	Cys	Arg	Gln	Ala	Phe 640
Phe	Thr	Val	Cys	Phe 645	Ser	Ile	Cys	Leu	Ser 650	Cys	Ile	Thr	Val	Arg 655	Ser
Phe	Gln	Ile	Val 660	Cys	Val	Phe	Lys 665	Met	Ala	Arg	Arg	Leu	Pro 670	Ser	Ala
Tyr	Ser	Phe 675	Trp	Met	Arg	Tyr	His 680	Gly	Pro	Tyr	Val	Phe 685	Val	Ala	Phe
Ile 690	Thr	Ala	Ile	Lys	Val	Ala 695	Leu	Val	Val	Gly	Asn 700	Met	Leu	Ala	Thr
Thr 705	Ile	Asn	Pro	Ile	Gly 710	Arg	Thr	Asp	Pro	Asp 715	Asp	Pro	Asn	Ile	Met 720
Ile	Leu	Ser	Cys	His 725	Pro	Asn	Tyr	Arg	Asn 730	Gly	Leu	Leu	Phe	Asn 735	Thr
Ser	Met	Asp	Leu 740	Leu	Leu	Ser	Val	Leu 745	Gly	Phe	Ser	Phe	Ala 750	Tyr	Met
Gly	Lys	Glu 755	Leu	Pro	Thr	Asn	Tyr 760	Asn	Glu	Ala	Lys	Phe 765	Ile	Thr	Leu
Ser 770	Met	Thr	Phe	Ser	Phe	Thr 775	Ser	Ser	Ile	Ser	Leu 780	Cys	Thr	Phe	Met
Ser 785	Val	His	Asp	Gly	Val 790	Leu	Val	Thr	Ile	Met 795	Asp	Leu	Leu	Val	Thr 800
Val	Leu	Asn	Phe	Leu 805	Ala	Ile	Gly	Leu	Gly 810	Tyr	Phe	Gly	Pro	Lys 815	Cys
Tyr	Met	Ile	Leu 820	Phe	Tyr	Pro	Glu	Arg 825	Asn	Thr	Ser	Ala	Tyr 830	Phe	Asn
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<210> 13
 <211> 843
 <212> PRT
 <213> Mus sp.

<220>
 <223> mouse G-protein coupled receptor (GPCR) B4 amino
 acid sequence

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 35 40 45
 Lys Ser Val Ser His Leu Ser Tyr Leu Gln Val Pro Lys Cys Asn Glu
 50 55 60
 Tyr Asn Met Lys Val Leu Gly Tyr Asn Leu Met Gln Ala Met Arg Phe
 65 70 75 80
 Ala Val Glu Glu Ile Asn Asn Cys Ser Ser Leu Leu Pro Gly Val Leu
 85 90 95
 Leu Gly Tyr Glu Met Val Asp Val Cys Tyr Leu Ser Asn Asn Ile Gln
 100 105 110
 Pro Gly Leu Tyr Phe Leu Ser Gln Ile Asp Asp Phe Leu Pro Ile Leu
 115 120 125
 Lys Asp Tyr Ser Gln Tyr Arg Pro Gln Val Val Ala Val Ile Gly Pro
 130 135 140
 Asp Asn Ser Glu Ser Ala Ile Thr Val Ser Asn Ile Leu Ser Tyr Phe
 145 150 155 160
 Leu Val Pro Gln Val Thr Tyr Ser Ala Ile Thr Asp Lys Leu Gln Asp
 165 170 175
 Lys Arg Arg Phe Pro Ala Met Leu Arg Thr Val Pro Ser Ala Thr His
 180 185 190
 His Ile Glu Ala Met Val Gln Leu Met Val His Phe Gln Trp Asn Trp
 195 200 205
 Ile Val Val Leu Val Ser Asp Asp Asp Tyr Gly Arg Glu Asn Ser His
 210 215 220
 Leu Leu Ser Gln Arg Leu Thr Asn Thr Gly Asp Ile Cys Ile Ala Phe
 225 230 235 240
 Gln Glu Val Leu Pro Val Pro Glu Pro Asn Gln Ala Val Arg Pro Glu
 245 250 255
 Glu Gln Asp Gln Leu Asp Asn Ile Leu Asp Lys Leu Arg Arg Thr Ser
 260 265 270

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Phe	Arg	Glu	Val	Leu	Arg	Trp	Asn	Phe	Thr	Gly	Phe	Val	Trp	Ile	Ala		
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Ser	Glu	Ser	Trp	Ala	Ile	Asp	Pro	Val	Leu	His	Asn	Leu	Thr	Glu	Leu		
305					310					315					320		
Arg	His	Thr	Gly	Thr	Phe	Leu	Gly	Val	Thr	Ile	Gln	Arg	Val	Ser	Ile		
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Pro	Gly	Phe	Ser	Gln	Phe	Arg	Val	Arg	His	Asp	Lys	Pro	Gly	Tyr	Arg		
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Met	Pro	Asn	Glu	Thr	Ser	Leu	Arg	Thr	Thr	Cys	Asn	Gln	Asp	Cys	Asp		
		355					360					365					
Ala	Cys	Met	Asn	Ile	Thr	Glu	Ser	Phe	Asn	Asn	Val	Leu	Met	Leu	Ser		
	370					375					380						
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385					390					395					400		
His	Thr	Leu	His	Arg	Leu	Leu	His	Cys	Asn	Gln	Val	Arg	Cys	Thr	Lys		
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Gln	Ile	Val	Tyr	Pro	Trp	Gln	Leu	Leu	Arg	Glu	Ile	Trp	His	Val	Asn		
			420					425					430				
Phe	Thr	Leu	Leu	Gly	Asn	Gln	Leu	Phe	Phe	Asp	Glu	Gln	Gly	Asp	Met		
		435					440					445					
Pro	Met	Leu	Leu	Asp	Ile	Ile	Gln	Trp	Gln	Trp	Gly	Leu	Ser	Gln	Asn		
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Tyr	Leu	Asn	Arg	Ser	Val	Asp	Glu	Phe	Asn	Cys	Leu	Ser	Cys	Pro	Gly		
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Ser	Met	Trp	Ser	Tyr	Lys	Asn	Asn	Ile	Ala	Cys	Phe	Lys	Arg	Arg	Leu		
545					550					555					560		
Ala	Phe	Leu	Glu	Trp	His	Glu	Val	Pro	Thr	Ile	Val	Val	Thr	Ile	Leu		
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Ala	Ala	Leu	Gly	Phe	Ile	Ser	Thr	Leu	Ala	Ile	Leu	Leu	Ile	Phe	Trp		
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 595 600 605
 Phe Leu Met Leu Val Pro Leu Leu Leu Ala Phe Gly Met Val Pro Val
 610 615 620
 Tyr Val Gly Pro Pro Thr Val Phe Ser Cys Phe Cys Arg Gln Ala Phe
 625 630 635 640
 Phe Thr Val Cys Phe Ser Val Cys Leu Ser Cys Ile Thr Val Arg Ser
 645 650 655
 Phe Gln Ile Val Cys Val Phe Lys Met Ala Arg Arg Leu Pro Ser Ala
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 Tyr Gly Phe Trp Met Arg Tyr His Gly Pro Tyr Val Phe Val Ala Phe
 675 680 685
 Ile Thr Ala Val Lys Val Ala Leu Val Ala Gly Asn Met Leu Ala Thr
 690 695 700
 Thr Ile Asn Pro Ile Gly Arg Thr Asp Pro Asp Asp Pro Asn Ile Ile
 705 710 715 720
 Ile Leu Ser Cys His Pro Asn Tyr Arg Asn Gly Leu Leu Phe Asn Thr
 725 730 735
 Ser Met Asp Leu Leu Leu Ser Val Leu Gly Phe Ser Phe Ala Tyr Val
 740 745 750
 Gly Lys Glu Leu Pro Thr Asn Tyr Asn Glu Ala Lys Phe Ile Thr Leu
 755 760 765
 Ser Met Thr Phe Ser Phe Thr Ser Ser Ile Ser Leu Cys Thr Phe Met
 770 775 780
 Ser Val His Asp Gly Val Leu Val Thr Ile Met Asp Leu Leu Val Thr
 785 790 795 800
 Val Leu Asn Phe Leu Ala Ile Gly Leu Gly Tyr Phe Gly Pro Lys Cys
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 Ser Met Ile Gln Gly Tyr Thr Met Arg Lys Ser
 835 840

<210> 14

<211> 669

<212> PRT

<213> Homo sapiens

<220>

 <223> human G-protein coupled receptor (GPCR) B4 amino
 acid sequence

<400> 14

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Met	Val	Gln	Leu	Met	Leu	His	Phe	Arg	Trp	Asn	Trp	Ile	Ile	Val	Leu	35	40	45	
Val	Ser	Ser	Asp	Thr	Tyr	Gly	Arg	Asp	Asn	Gly	Gln	Leu	Leu	Gly	Glu	50	55	60	
Arg	Val	Ala	Arg	Arg	Asp	Ile	Cys	Ile	Ala	Phe	Gln	Glu	Thr	Leu	Pro	65	70	75	80
Thr	Leu	Gln	Pro	Asn	Gln	Asn	Met	Thr	Ser	Glu	Glu	Arg	Gln	Arg	Leu	85	90	95	
Val	Thr	Ile	Val	Asp	Lys	Leu	Gln	Gln	Ser	Thr	Ala	Arg	Val	Val	Val	100	105	110	
Val	Phe	Ser	Pro	Asp	Leu	Thr	Leu	Tyr	His	Phe	Phe	Asn	Glu	Val	Leu	115	120	125	
Arg	Gln	Asn	Phe	Thr	Gly	Ala	Val	Trp	Ile	Ala	Ser	Glu	Ser	Trp	Ala	130	135	140	
Ile	Asp	Pro	Val	Leu	His	Asn	Leu	Thr	Glu	Leu	Gly	His	Leu	Gly	Thr	145	150	155	160
Phe	Leu	Gly	Ile	Thr	Ile	Gln	Ser	Val	Pro	Ile	Pro	Gly	Phe	Ser	Glu	165	170	175	
Phe	Arg	Glu	Trp	Gly	Pro	Gln	Ala	Gly	Pro	Pro	Pro	Leu	Ser	Arg	Thr	180	185	190	
Ser	Gln	Ser	Tyr	Thr	Cys	Asn	Gln	Glu	Cys	Asp	Asn	Cys	Leu	Asn	Ala	195	200	205	
Thr	Leu	Ser	Phe	Asn	Thr	Ile	Leu	Arg	Leu	Ser	Gly	Glu	Arg	Val	Val	210	215	220	
Tyr	Ser	Val	Tyr	Ser	Ala	Val	Tyr	Ala	Val	Ala	His	Ala	Leu	His	Ser	225	230	235	240
Leu	Leu	Gly	Cys	Asp	Lys	Ser	Thr	Cys	Thr	Lys	Arg	Val	Val	Tyr	Pro	245	250	255	
Trp	Gln	Leu	Leu	Glu	Glu	Ile	Trp	Lys	Val	Asn	Phe	Thr	Leu	Leu	Asp	260	265	270	
His	Gln	Ile	Phe	Phe	Asp	Pro	Gln	Gly	Asp	Val	Ala	Leu	His	Leu	Glu	275	280	285	
Ile	Val	Gln	Trp	Gln	Trp	Asp	Arg	Ser	Gln	Asn	Pro	Phe	Gln	Ser	Val	290	295	300	
Ala	Ser	Tyr	Tyr	Pro	Leu	Gln	Arg	Gln	Leu	Lys	Asn	Ile	Lys	Thr	Ser	305	310	315	320
Leu	His	Thr	Val	Asn	Asn	Thr	Ile	Pro	Met	Ser	Met	Cys	Ser	Lys	Arg	325	330	335	

Cys	Gln	Ser	Gly	Gln	Lys	Lys	Lys	Pro	Val	Gly	Ile	His	Val	Cys	Cys	340	345	350
Phe	Glu	Cys	Ile	Asp	Cys	Leu	Pro	Gly	Thr	Phe	Leu	Asn	His	Thr	Glu	355	360	365
Cys	Pro	Asn	Asn	Glu	Trp	Ser	Tyr	Gln	Ser	Glu	Thr	Ser	Cys	Phe	Lys	370	375	380
Arg	Gln	Leu	Val	Phe	Leu	Glu	Trp	His	Glu	Ala	Pro	Thr	Ile	Ala	Val	385	390	395
Ala	Leu	Leu	Ala	Ala	Leu	Gly	Phe	Leu	Ser	Thr	Leu	Ala	Ile	Leu	Val	405	410	415
Ile	Phe	Trp	Arg	His	Phe	Gln	Thr	Pro	Ile	Val	Arg	Ser	Ala	Gly	Gly	420	425	430
Pro	Met	Cys	Phe	Leu	Met	Leu	Thr	Leu	Leu	Leu	Val	Ala	Tyr	Met	Val	435	440	445
Val	Pro	Val	Tyr	Val	Gly	Pro	Pro	Lys	Val	Ser	Thr	Cys	Leu	Cys	Arg	450	455	460
Gln	Ala	Leu	Phe	Pro	Leu	Cys	Phe	Thr	Ile	Cys	Ile	Ser	Cys	Ile	Ala	465	470	475
Val	Arg	Ser	Phe	Gln	Ile	Val	Cys	Ala	Phe	Lys	Met	Ala	Ser	Arg	Phe	485	490	495
Pro	Arg	Ala	Tyr	Ser	Tyr	Trp	Val	Arg	Tyr	Gln	Gly	Pro	Tyr	Val	Ser	500	505	510
Met	Ala	Phe	Ile	Thr	Val	Leu	Lys	Met	Val	Ile	Val	Val	Ile	Gly	Met	515	520	525
Leu	Ala	Arg	Pro	Gln	Ser	His	Pro	Arg	Thr	Asp	Pro	Asp	Asp	Pro	Lys	530	535	540
Ile	Thr	Ile	Val	Ser	Cys	Asn	Pro	Asn	Tyr	Arg	Asn	Ser	Leu	Leu	Phe	545	550	555
Asn	Thr	Ser	Leu	Asp	Leu	Leu	Leu	Ser	Val	Val	Gly	Phe	Ser	Phe	Ala	565	570	575
Tyr	Met	Gly	Lys	Glu	Leu	Pro	Thr	Asn	Tyr	Asn	Glu	Ala	Lys	Phe	Ile	580	585	590
Thr	Leu	Ser	Met	Thr	Phe	Tyr	Phe	Thr	Ser	Ser	Val	Ser	Leu	Cys	Thr	595	600	605
Phe	Met	Ser	Ala	Tyr	Ser	Gly	Val	Leu	Val	Thr	Ile	Val	Asp	Leu	Leu	610	615	620
Val	Thr	Val	Leu	Asn	Leu	Leu	Ala	Ile	Ser	Leu	Gly	Tyr	Phe	Gly	Pro	625	630	635

Lys	Cys	Tyr	Met	Ile	Leu	Phe	Tyr	Pro	Glu	Arg	Asn	Thr	Pro	Ala	Tyr
			645						650					655	
Phe	Asn	Ser	Met	Ile	Gln	Gly	Tyr	Thr	Met	Arg	Arg	Asp			
			660					665							